

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTO/38/98 (11-98)
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
This form is estimated to take 0.2 hours to complete. The time will vary depending upon the needs of the individual. This form is required to complete this request. Send to: PTO/38/98 (11-98)

REQUEST FOR ACCESS OF ABANDONED APPLICATION UNDER 37 CFR 1.14(a)

RECEIVED
OCT 26 2001
File Information Unit

In re Application of

Application number

09/061318

Filed

4/16/98

Group Art Unit

Examiner

Paper No.

#25

Assistant Commissioner for Patents
Washington, DC 20231

I hereby request access under 37 CFR 1.14(a)(3)(iv) to the application file record of the above-identified ABANDONED application, which is: (CHECK ONE)

☒ (A) referred to in United States Patent Number 6267125 column _____

☐ (B) referred to in an application that is open to public inspection as set forth in 37 CFR 1.11, i.e., Application No. _____ filed _____ on page _____ of paper number _____

☐ (C) an application that claims the benefit of the filing date of an application that is open to public inspection, i.e., Application No. _____ filed _____ or

☐ (D) an application in which the applicant has filed an authorization to lay open the complete application to the public.

Please direct any correspondence concerning this request to the following address:

Richard J. Jones

Signature

RICHARD J

Typed or printed name

10/26/01
Date

FOR PTO USE ONLY

Approved by: _____

(Initials)

Unit: F-114

BEST AVAILABLE COPY



US006267125B1

(12) **United States Patent**
Bergman et al.(10) **Patent No.:** **US 6,267,125 B1**
(45) **Date of Patent:** **Jul. 31, 2001**(54) **APPARATUS AND METHOD FOR
PROCESSING THE SURFACE OF A
WORKPIECE WITH OZONE**0 548 596 A2 6/1993 (EP) .
0 702 399 3/1996 (EP) .
2 287 827 9/1995 (GB) .
52-12063 4/1977 (JP) .(75) Inventors: **Eric J. Bergman; Mignon P. Hess,**
both of Kalispell, MT (US)(73) Assignee: **Semitool, Inc.,** Kalispell, MT (US)(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.(21) Appl. No.: **09/677,934**(22) Filed: **Oct. 3, 2000****Related U.S. Application Data**(60) Division of application No. 09/061,318, filed on Apr. 16,
1998, which is a continuation-in-part of application No.
08/853,649, filed on May 9, 1997.(51) **Int. Cl.⁷** **B08B 3/02**(52) **U.S. Cl.** **134/102.1; 134/102.3;**
134/148; 134/153; 134/902(58) **Field of Search** **134/102.1, 102.3,**
134/102.2, 902, 186, 148, 153(56) **References Cited****U.S. PATENT DOCUMENTS**4,695,327 9/1987 Grebinski .
4,778,532 10/1988 McConnell et al. .
4,899,767 1/1990 McConnell et al. .
4,974,530 12/1990 Lyon .
5,032,218 * 7/1991 Dobson .
5,055,138 10/1991 Slinn .
5,071,485 12/1991 Matthews et al. .
5,120,370 6/1992 Mori et al. .
5,181,985 1/1993 Lampert et al. .
5,232,511 8/1993 Bergman .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0 344 764 12/1989 (EP) .

OTHER PUBLICATIONS

Abstract of JP 3041729 published Feb. 22, 1991.

Abstract of JP 1008630, published Jan. 12, 1989.

Abstract of Japanese Appln. No. 63-16127 published Jul.
31, 1989.Abstract of Japanese Appln. No. 52-100473 published Mar.
14, 1979.Abstract of Japanese Appln. No. 1-192712 published Mar.
12, 1992.Translation/Abstract of Japanese Appln. No. 1984-125760
published Jan. 10, 1986.Heyns, M.M., et al. "New Wet Cleaning Strategies for
Obtaining Highly Reliable Thin Oxides," MRP Symposium
Proceedings on Materials Research Society, Spring Meeting,
San Francisco, CA Apr. 12-13, 1993, p. 35 (1993).

(List continued on next page.)

Primary Examiner—Frankie L. Stinson(74) *Attorney, Agent, or Firm*—Lyon & Lyon LLP(57) **ABSTRACT**

An apparatus for supplying a mixture of a treatment liquid and ozone for treatment of a surface of a workpiece, and a corresponding method are set forth. The preferred embodiment of the apparatus comprises a liquid supply line that is used to provide fluid communication between a reservoir containing the treatment liquid and a treatment chamber housing the workpiece. A heater is disposed to heat the workpiece, either directly or indirectly. Preferably, the workpiece is heated by heating the treatment liquid that is supplied to the workpiece. One or more nozzles accept the treatment liquid from the liquid supply line and spray it onto the surface of the workpiece while an ozone generator provides ozone into an environment containing the workpiece.

25 Claims, 6 Drawing Sheets